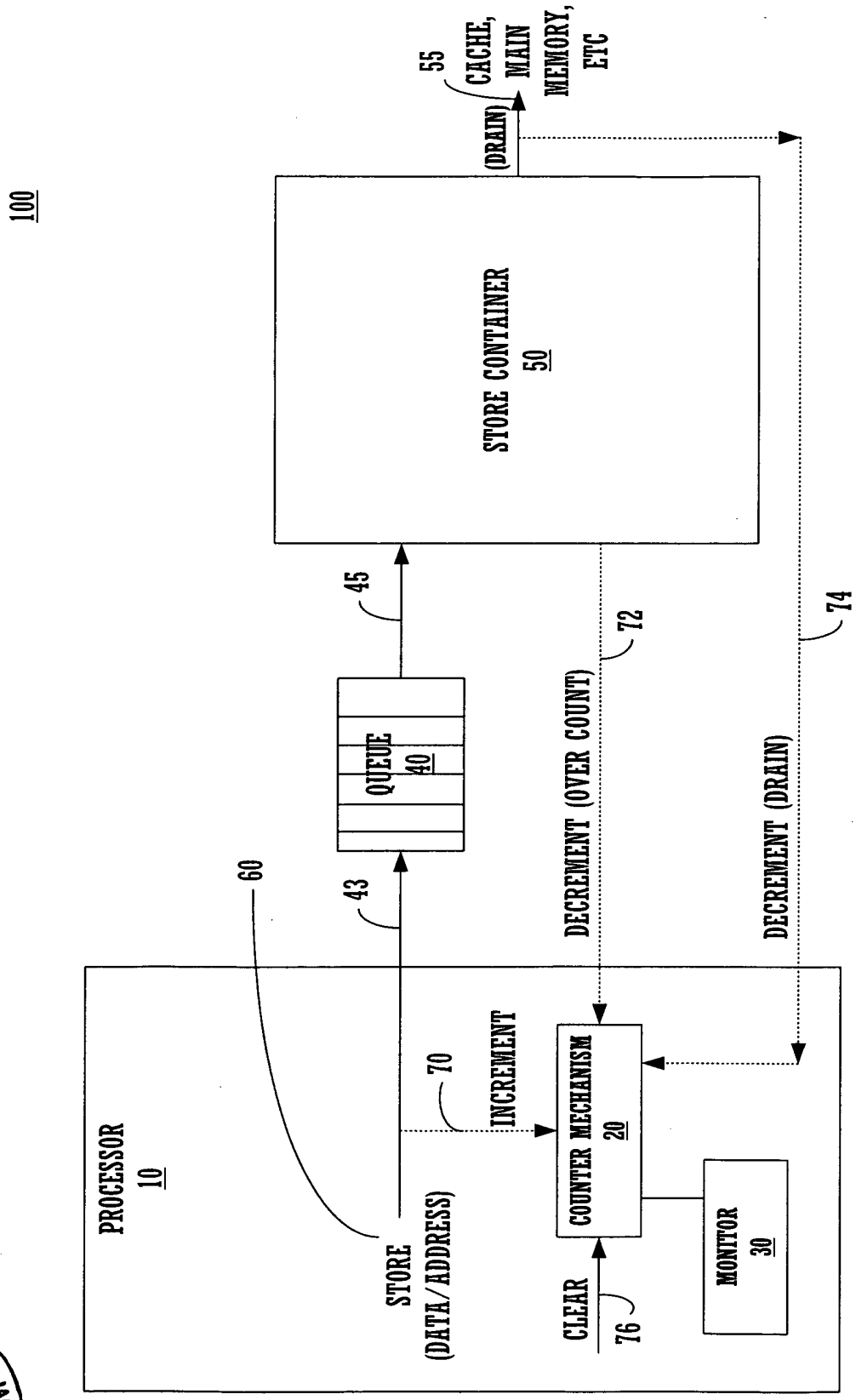

FIGURE 1

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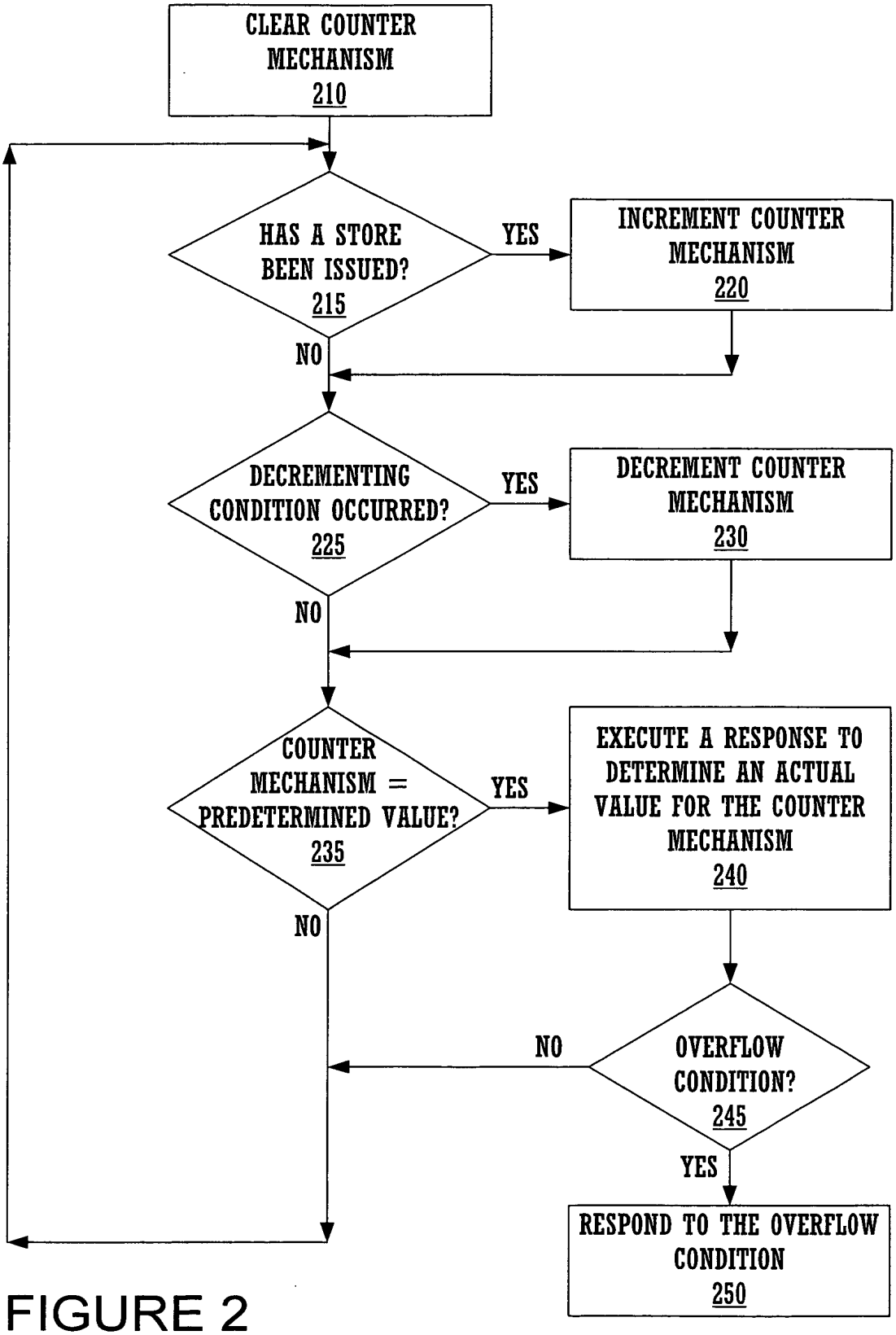
CLEAR COUNTER MECHANISM 210
HAS A STORE BEEN ISSUED? 215
YES
INCREMENT COUNTER MECHANISM 220
NO
DECREMENTING CONDITION OCCURRED? 225
YES
DECREMENT COUNTER MECHANISM 230
NO
COUNTER MECHANISM = PREDETERMINED VALUE? 235
YES
EXECUTE A RESPONSE TO DETERMINE AN ACTUAL VALUE FOR THE COUNTER MECHANISM 240
NO
OVERFLOW CONDITION? 245
NO
YES
RESPOND TO THE OVERFLOW CONDITION 250

FIGURE 2

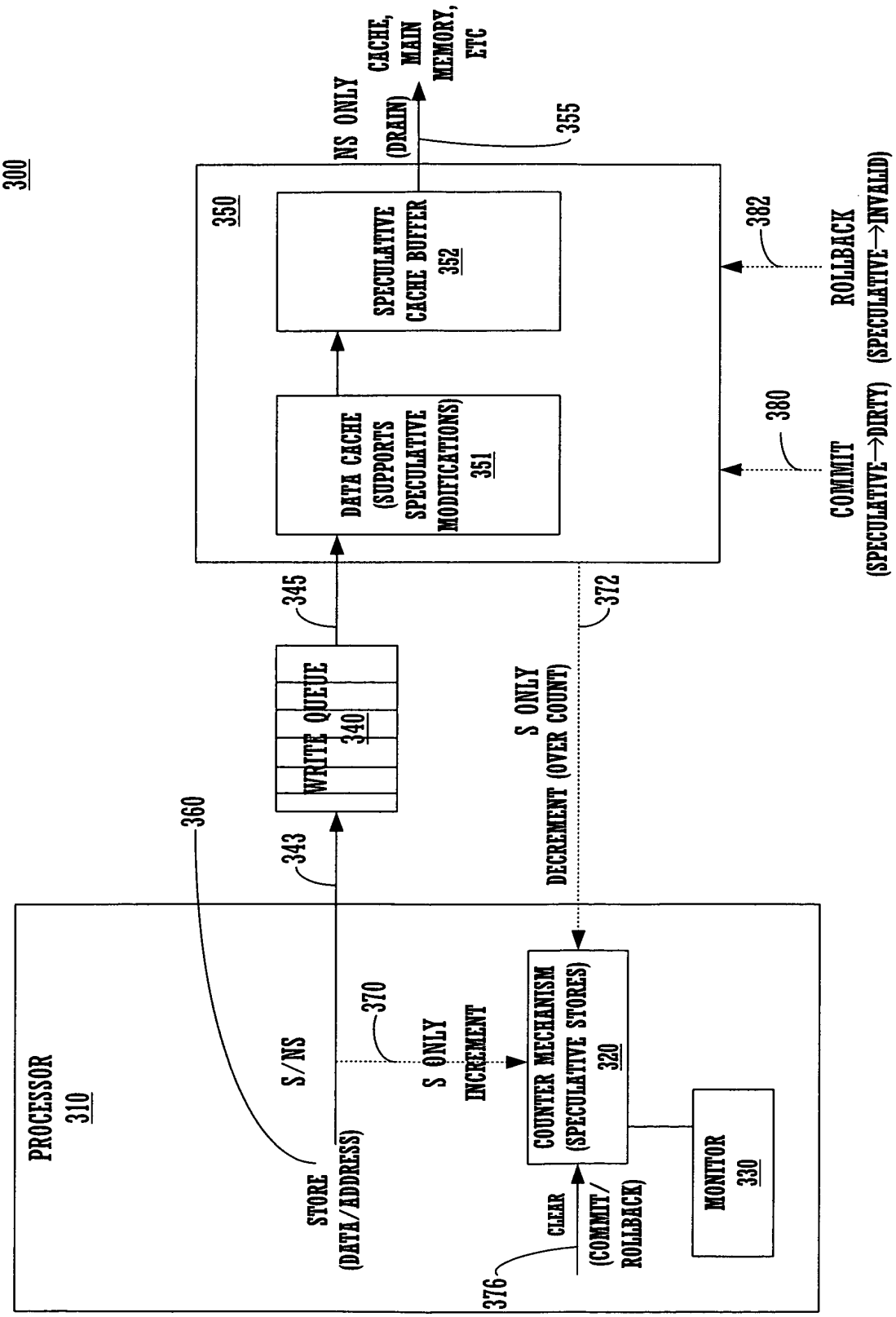
300
PROCESSOR 310
STORE (DATA/ADDRESS)
S/NS
360
343
WRITE QUEUE 340
345
350
DATA CACHE (SUPPORTS SPECULATIVE MODIFICATIONS) 351
SPECULATIVE CACHE BUFFER 352
NS ONLY (DRAIN)
CACHE, MAIN MEMORY, ETC
355
372
S ONLY DECREMENT (OVER COUNT)
370
S ONLY INCREMENT
COUNTER MECHANISM (SPECULATIVE STORES) 320
MONITOR 330
CLEAR (COMMIT/ ROLLBACK)
376
380
COMMIT (SPECULATIVE→DIRTY)
382
ROLLBACK (SPECULATIVE→INVALID)

FIGURE 3

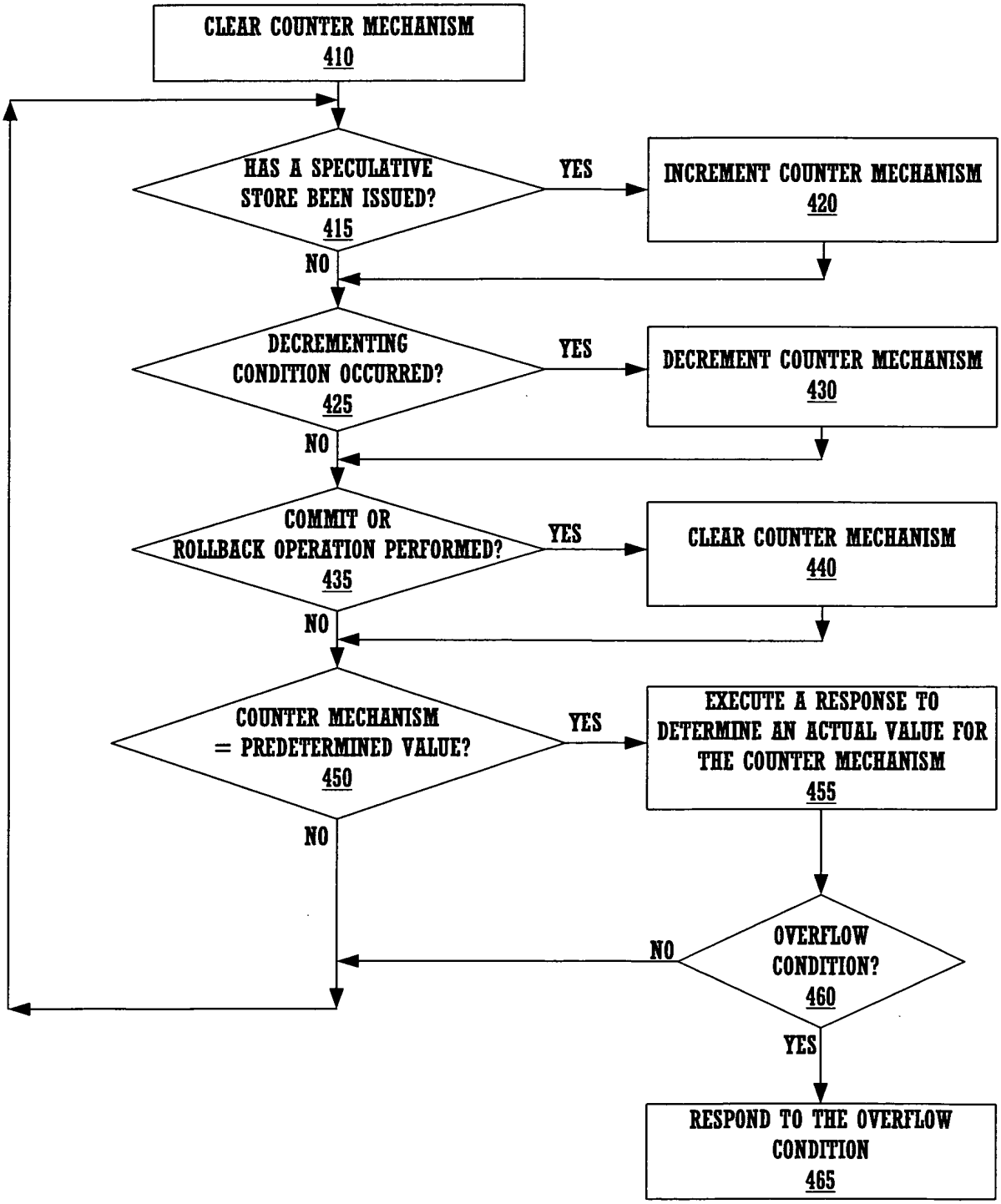
CLEAR COUNTER MECHANISM
410
HAS A SPECULATIVE STORE BEEN ISSUED?
415
YES
INCREMENT COUNTER MECHANISM
420
NO
DECREMENTING CONDITION OCCURRED?
425
YES
DECREMENT COUNTER MECHANISM
430
NO
COMMIT OR ROLLBACK OPERATION PERFORMED?
435
YES
CLEAR COUNTER MECHANISM
440
NO
COUNTER MECHANISM = PREDETERMINED VALUE?
450
YES
EXECUTE A RESPONSE TO DETERMINE AN ACTUAL VALUE FOR THE COUNTER MECHANISM
455
NO
OVERFLOW CONDITION?
460
NO
YES
RESPOND TO THE OVERFLOW CONDITION
465

FIGURE 4

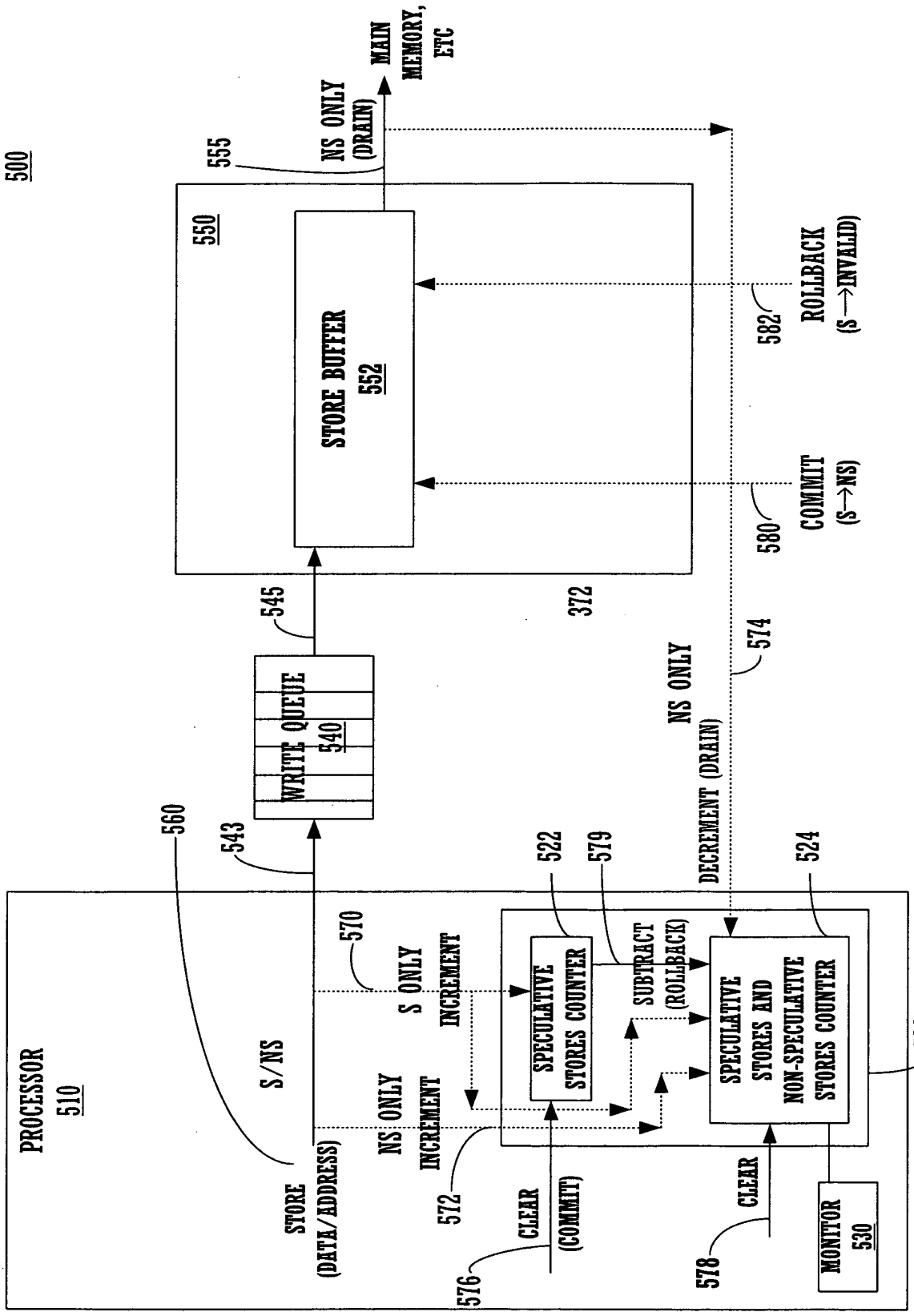
500
555
NS ONLY (DRAIN)
MAIN MEMORY, ETC
550
STORE BUFFER 552
582
ROLLBACK (S→INVALID)
580
COMMIT (S→NS)
372
545
WRITE QUEUE 540
574
NS ONLY DECREMENT (DRAIN)
560
543
522
579
524
PROCESSOR 510
570
S ONLY INCREMENT
SUBTRACT (ROLLBACK)
SPECULATIVE STORES COUNTER
SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
520
S/NS
NS ONLY INCREMENT
572
STORE (DATA/ADDRESS)
CLEAR (COMMIT)
576
CLEAR
578
MONITOR 530

FIGURE 5

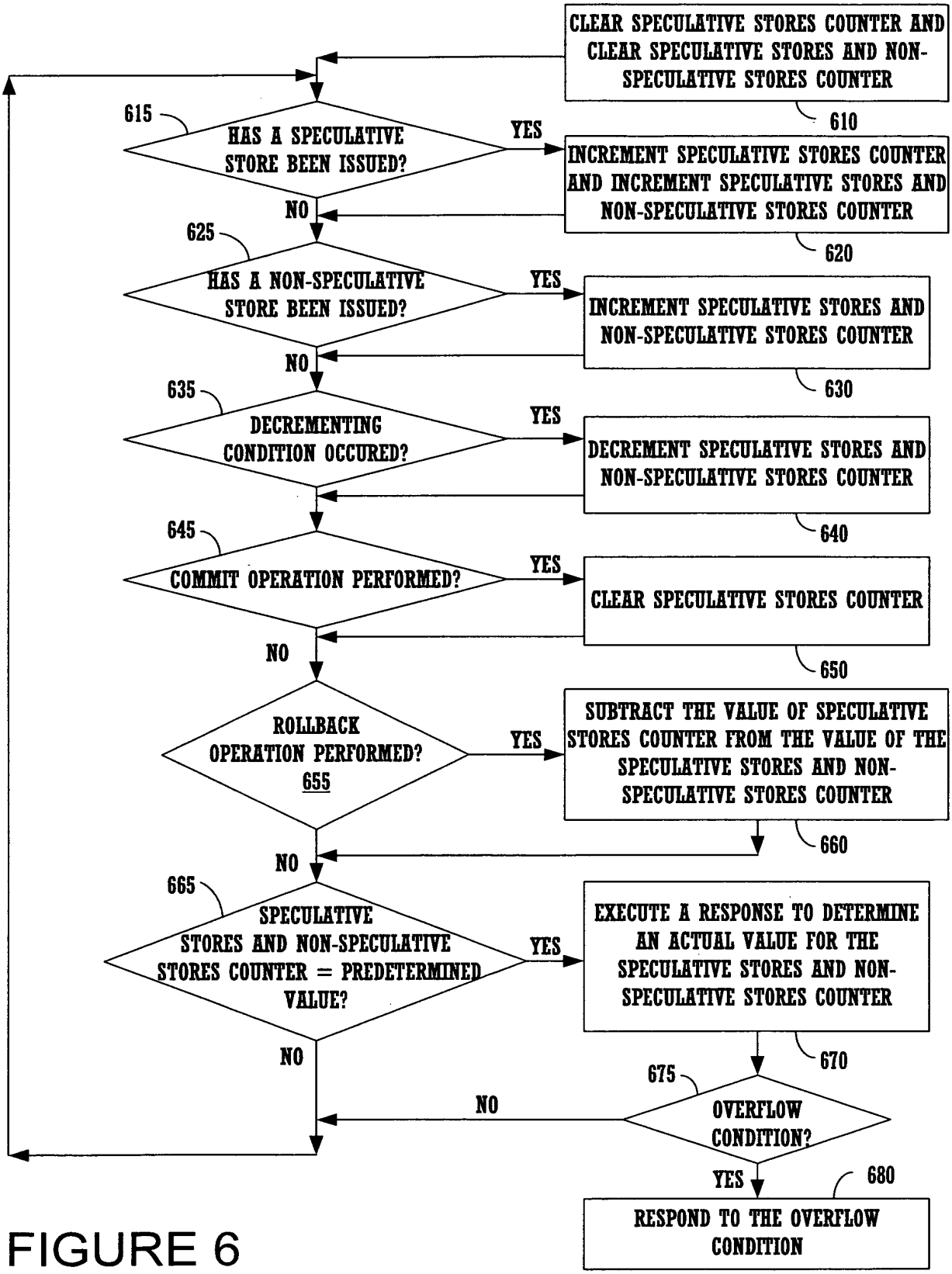
CLEAR SPECULATIVE STORES COUNTER AND CLEAR SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
610
615
HAS A SPECULATIVE STORE BEEN ISSUED?
YES
INCREMENT SPECULATIVE STORES COUNTER AND INCREMENT SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
620
NO
625
HAS A NON-SPECULATIVE STORE BEEN ISSUED?
YES
INCREMENT SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
630
NO
635
DECREMENTING CONDITION OCCURED?
YES
DECREMENT SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
640
645
COMMIT OPERATION PERFORMED?
YES
CLEAR SPECULATIVE STORES COUNTER
650
NO
ROLLBACK OPERATION PERFORMED? 655
YES
SUBTRACT THE VALUE OF SPECULATIVE STORES COUNTER FROM THE VALUE OF THE SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
660
NO
665
SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER = PREDETERMINED VALUE?
YES
EXECUTE A RESPONSE TO DETERMINE AN ACTUAL VALUE FOR THE SPECULATIVE STORES AND NON-SPECULATIVE STORES COUNTER
670
NO
675
OVERFLOW CONDITION?
NO
YES
680
RESPOND TO THE OVERFLOW CONDITION

FIGURE 6